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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/603,184	06/26/2000	Hirohisa Suzuki	81784.0211	3365

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EXAMINER

RAMOS FELICIANO, ELISEO

ART UNIT	PAPER NUMBER
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2681

15

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/603,184

Applicant(s)

SUZUKI ET AL.

Examiner

Eliseo Ramos-Feliciano

Art Unit

2681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U.S. Patent Number 5,828,467) in view of Arai et al. (U.S. Patent Number 5,929,936).

Regarding **claim 1**, Suzuki discloses a noise cancel circuit (Figure 1) that includes an interpolation circuit (5) for performing interpolation processing on a detected image signal (at 1) during generation of a pulse noise; the pulse noise portion is interpolated; see the abstract, Figure 1 and columns 6-7.

The image signal can be transmitted and received; see column 2, lines 28-34. However, Suzuki fails to specify that it can be a radio signal or radio transmitted/received, as claimed by applicant. Nevertheless, it is not critical to Suzuki the type of signal used; criticality resides on the method taught to cancel the noise out of the signal.

Arai et al. discloses a noise cancel circuit wherein the transmitted received signal is RF; as depicted in Figures 1-2, particularly element 3.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply Suzuki's teachings over radio signals because the teaching of noise cancellation taught by Suzuki is not signal type dependent as can be found in Arai et al.'s suggestion of applying noise cancellation to an RF/radio signal.

Regarding **claim 2**, Suzuki and Arai et al. disclose everything claimed as applied above (see *claim 1*). However, even though Suzuki and Arai et al. disclose interpolation, they do not specifically disclose spline-type interpolation as claimed.

The type of interpolation is not relevant as accurate results are achieved. While many different types of interpolation can be applied, spline interpolation is conventionally known for accurate approximation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically apply spline interpolation to Suzuki and Arai et al.'s signal for the advantage of more accurate approximation and results.

Regarding **claim 3**, Suzuki and Arai et al. disclose everything claimed as applied above (see claim 1). In addition, the circuit further includes a noise detection circuit (2 and 4) for detecting the noise portion as claimed by applicant. The noise portion is interpolated by the interpolation circuit (5) according to an output signal from the noise detection circuit; Figure 1.

Regarding **claims 4-6 and 8-9**, Suzuki and Arai et al. disclose everything claimed as applied above (see claim 3). In addition, the circuit further includes a selection circuit (12) for selecting either the output signal from the interpolation circuit or the detected signal (via 9 and 8). See Figure 1.

Interpolation is performed regardless of presence or absence of noise components. See Figure 1 and columns 1-4.

The circuit further includes a first delay circuit (8) and a second delay circuit (7) as claimed by applicant. The delay time of the first delay circuit corresponds to a sum of the

Art Unit: 2681

interpolation processing time and the delay time of the second delay circuit. This is to time-match the signal delay via both paths. See Figure 1 and citations above.

Regarding **claim 7**, Suzuki and Arai et al. disclose everything claimed as applied above (see *claim 6*). However, Suzuki and Arai et al. fail to particularly disclose that the location of the second delay circuit is prior to (before) the interpolation circuit.

Since the function of Suzuki's second delay circuit is to match-timing, its location is not relevant as long as timing match is achieved. Relocation of the delay circuit would be an engineering design choice.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to locate the second delay circuit prior to the interpolation circuit because of particular engineering design choice.

Regarding **claim 10**, Suzuki and Arai et al. disclose everything claimed as applied above (see *claim 1*). In addition, Arai et al. teaches that the signal can be an audio signal; see column 1, lines 1-44.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371⁹ of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being

Art Unit: 2681

examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. **Claims 1 and 3** are rejected under 35 U.S.C. 102(e) as being anticipated by Arai et al. (U.S. Patent Number 5,929,936).

Regarding **claims 1 and 3**, Arai et al. discloses a noise cancel circuit as depicted in Figures 1-2. The circuit includes an interpolation circuit 30 for performing interpolation processing on a detected radio signal. During generation of a pulse noise, a noise portion of the detected signal is interpolated, as depicted in Figures 6-10 and disclosed in the abstract and columns 3-5.

Noise detection is performed by a noise extracting unit (26, 29) in order to achieve noise reduction or cancellation. Therefore, the circuit also includes noise detection circuitry as claimed.

Regarding **claim 10**, Arai et al. disclose everything claimed as applied above (see claim 1). In addition, Arai et al. teaches that the signal can be an audio signal; see column 1, lines 1-44.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2681

6. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (U.S. Patent Number 5,929,936) in view of the knowledge generally available to one of ordinary skill in the art.

Regarding **claim 2**, Arai et al. discloses everything claimed as applied above (see *claim 1*). However, even though Arai et al. discloses interpolation (see Figures 3-10), he does not specifically disclose spline-type interpolation as claimed.

The type of interpolation is not relevant as accurate results are achieved. While many different types of interpolation can be applied, spline interpolation is conventionally known for accurate approximation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically apply spline interpolation to Arai et al.'s signal for the advantage of more accurate approximation and results.

Response to Arguments

7. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any response to this Office action should be mailed to:
Commissioner of Patents and Trademarks
Washington, D.C. 20231
or faxed to: (703) 872-9306
for formal communications intended for entry, informal communications or draft communications; in the case of informal or draft communications, please label "PROPOSED" or "DRAFT".
Hand-delivered responses should be brought to
Crystal Park II
2121 Crystal Drive
Arlington, VA
Sixth Floor (Receptionist).

Art Unit: 2681

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eliseo Ramos-Feliciano whose telephone number is (703) 305-0078. The examiner can normally be reached on Monday through Thursday (first week of bi-week) and Monday through Friday (second week of bi-week) from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran, can be reached on (703) 305-4040.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700, or call Group customer service at (703) 306-0377.

ELISEO RAMOS-FELICIANO
PATENT EXAMINER

ERF/erf
February 20, 2004.



SINH TRAN
PRIMARY EXAMINER